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ABSTRACT

Statistical analysis of election results from four California counties over a twenty-year period (1956-1977) shows that the defeat of an incumbent school board member in one election increases the probability of incumbent defeats in the next three elections in the same district, while decreasing the probability of incumbent defeats in that district in elections eight or more years later. The tendency of some districts to have greater electoral instability than others was tested and taken into account in the analysis. (Author/PGD)

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TESTING A POPULAR CONCEPT: THE LUTZ-IANNACCONE MODEL

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Introduction

Frank Lutz and Laurence Iannaccone in a recent publication[1] explicitly argue that democracy is expressed through periodic readjustments of governmental policy in response to deeply felt and politically expressed dissatisfaction of the school policy formulated by a well established school board and superintendent. It has been suggested,[2] however, that this realignment period in a district occurs after a shift in the demographic and ideological make up of a community.

It is important to recognize that research based on the Iannaccone/Lutz[3] model has not adequately considered all aspects of critical elections theory. For example, no test of the Iannaccone/Lutz theory has distinguished between an initial incumbent defeat after a period of quiesence and the existence of continued electoral instability reflected in repeated defeats. In order to convincingly demonstrate that accumulated citizen dissatisfaction leads to the episodic defeat of school board members, it would need to be found that, over an extended period in the history of a typical school board, incumbent defeats occur in relatively brief clusters separated by longish periods of low conflict, no defeat elections.

It is the purpose of the study reported here to examine whether the process of school board incumbent defeats is appropriately described as an episodic and predictable process rather than a random process.

Hypothesis and Definition of Variables

The working hypothesis for this study is that episodes of electoral instability as defined by the temporal clustering of incumbent school board member defeats will arise when communities are dissatisfied with their school boards. The outcome of any school district election will affect the probability of incumbent defeat occurring in subsequent elections. The effect will be more dramatic in those elections immediately following the initial elections and will be in the opposite direction from effects on more remote elections. To recapitulate the problem, the independent variable of this study is electoral instability operationalized to mean incumbent defeat. The dependent variable is subsequent history of electoral instability as measured by subsequent incumbent defeats. The attempt of the study will be to view the connection of incumbent defeats in the history of a local school district.

Three factors have been demonstrated to be important when considering the relationship of incumbent school board member defeats.

1. As discussed by Minar, it has been shown that some districts have significantly fewer incumbent school board member defeats than do others.[4]
2. Within time it has been shown that the best predictor of an incumbent school board member defeat is the defeat of an incumbent in the prior election.[5]
3. Incumbent school board member defeats have been shown to occur more frequently at some points in history than at other points.[6]

The study will be starting from a null hypothesis that incumbent school board member defeat is not influenced by prior incumbent member defeat. That is to say, that incumbent member defeat is randomly related to prior incumbent defeat. If the argument is correct that the indication of the presence of electoral dissatisfaction leads to incumbent member defeat, and if incumbent defeats are found to be occurring in clusters, then it is appropriate to conclude that electoral dissatisfaction occurs in episodes. However, if the null hypothesis cannot be rejected and it is found that incumbent defeats occur in random sequence, then electoral dissatisfaction must be seen as randomly distributed.

The question then is, do the incumbent defeats in a particular year depend upon other incumbent defeats occurring in the same districts at some earlier time? In light of Minar's[7] study it is important to control for the possibility that incumbent defeats are clustered in a relatively small group of districts and causing a spurious rejection of the null hypothesis because of <u>within district</u> contingency relationships rather than <u>between elections</u> effects.

The Sample

The population in this study consists of the elementary, secondary, and unified school districts located in California which fit four criteria:

1) Five member boards,
2) conducted elections from 1956 to 1977,
3) elected board members at-large, and
4) none which have undergone unification or annexation during the time under investigation.

The sample is limited to five-member boards in order to maintain consistency of structure and to produce an organizational structure applicable to the majority of California school districts. School districts with small student enrollments usually have three-member boards of education while very large school districts generally have seven-member boards.

The sample will not include school districts that elect board members by wards or areas because they are different in unknown ways from districts with at-large elections and would destroy the homogenity of the sample. The absence of trustee areas or wards in our sample will assist in generating findings that are generalizable to the vast majority of California school board member elections.

School districts that have undergone annexation or unification from 1956 to 1977 were eliminated from the sample. It is felt that unification and/or annexation creates political issues not common to the typical school board election. The effect of these political factors is yet unknown and would affect the research here in unknown ways.[8]

Table 1 consists of the 1978 population of districts that make up the four counties from which our sample districts were drawn. The total population of the four counties consisted of 103 districts. The resulting sample for this study is composed of the 89 districts from four Southern California counties which met the four criteria. San Bernardino County has the largest land area of any California county. Riverside County is the third largest county in land area in California. Los Angeles County is one of the most densely populated counties found in America. Orange County is one of California's most rapidly developing counties. Urban, suburban and rural environments are found within these four

counties which make up the sample. Table 2 displays the distribution of our 89 sample school districts by county and by type of school district organization. These are the districts which met our four criteria. Also, those districts which had incomplete data were removed from our sample, i.e., those districts in which some election data was unavailable.

The chi-square[9] for type of districts indicates a maldistribution between types of school districts with a disproportionate clustering in the elementary school districts. The maldistribution was due to too many elementary school districts with not enough unified school districts to fit the population profile (Table 1). The major cause for this under-representation is due to the period of analysis which was selected since many of the unified districts underwent unification/annexation during this time frame. The distribution between counties appears to be a normal distribution. There appears to be no serious problems in our sample.

TABLE 1

THE POPULATION OF DISTRICTS BY COUNTY

AND BY TYPE OF DISTRICTS

	Elementary N (%)	Secondary	Unified	Four County Total
Los Angeles	29 (28%)	6 (6%)	15 (15%)	50 (49%)
Orange	14 (14%)	3 (3%)	2 (2%)	19 (18%)
Riverside	5 (5%)	1 (1%)	11 (11%)	17 (17%)
San Bernardino	11 (11%)	1 (1%)	5 (5%)	17 (17%)
Total*	59 (57%)	11 (11%)	33 (32%)	103

*Percentages may not total to 100% due to round-off.

TABLE 2

NUMBER OF DISTRICTS BY COUNTY AND

BY TYPE OF DISTRICT IN THE SAMPLE

County	Elementary	Secondary	Unified	Total
Los Angeles	28 (32%)	6 (7%)	13 (15%)	47 (53%)
Orange	10 (11%)	3 (3%)	2 (2%)	15 (17%)
Riverside	4 (5%)	1 (1%)	6 (7%)	11 (12%)
San Bernardino	11 (12%)	1 (1%)	4 (5%)	16 (18%)
Total*	53 (60%)	11 (12%)	25 (28%)	89

*Totals may not total 100% due to round-off.

The goodness of fit chi square by county is .752, df = 3, p < NS.

The goodness of fit chi square by type of district is 10.6, df = 2, p < .01.

The Period Covered by the Study

The theory suggests that an episode consists of a period of quiescence which is interrupted by a period of instability. On the basis of secondary data analysis, it was suggested by Mitchell and Thorsted[10] that it may take approximately ten to 16 years from the time of a change in socio-economic status in the community to incumbent school board member defeat and the subsequent superintendent turnover.

If the Mitchell/Thorsted[11] observation is taken as reasonable, an episode can be expected to run its course within 20 years or less. Therefore, 20 years of election data should provide an adequate basis

for analysis. If the process of school board member incumbent defeat is random rather than episodic, this should become evident in longitudinal data covering at least two decades. Election data was, therefore, collected from each school district for all elections from 1956 through 1977. Under California law, elections were held in each of the districts in every odd numbered year starting in 1959. Prior to 1959 elections were held annually. Although special elections were conducted from time to time in certain districts which found a vacant seat in their board due to retirement, death, illness or resignation, data from these elections is not useful in testing our major hypothesis, since no incumbents seek election at these special elections.

Data Collection

Election outcomes were available for most of the years and districts from the County Superintendent of Schools Office and/or the County Elections Department. Newspapers were utilized for gathering some additional election results for those elections which were not available from either of the two primary sources.

The following data were collected for each regular election from the 89 school districts:

1) Year of the election,
2) name of all school board candidates for each election,
3) votes for all candidates,
4) identity of incumbents seeking re-election,
5) identity of elected candidates, and
6) the number of school board positions to be filled.

Data Analysis

The procedures for analysis which were utilized were complex. These procedures will be described in this section. The next chapter will present their findings. Our first step was to determine whether or not district effect as found in the Minar[12] work was significant in our data. This was done by way of a two-way analysis of variance.

The data table for the two-way ANOVA problem consists of 89 districts by nine election periods. In each cell is represented the outcome of each election for that district. The outcome score is either a "0" if there was no incumbent defeat or a "1" if there was an incumbent defeat.

In order to investigate whether the defeat of an incumbent school board member in one election is dependent upon the outcome of previous elections, a three-way analysis of variance technique was utilized. Cochran's Q test was utilized to verify the robustness of the F statistic.[13] Once the analysis of variance demonstrated that the rate of incumbent defeat is significantly affected by prior election results, regression analysis was used to describe more precisely the nature and extent of the relationship.

A data table was constructed for the application of a three-way analysis of variance.[14] The scoring was done by assigning a score of 1.0 to those elections which resulted in an incumbent defeat and a score of 0.0 to those in which no incumbent defeat occurred. Figure 2 is an example of the scoring process for one district.

FIGURE 2

SCORING OF A SAMPLE DISTRICT

	57	59	61	63	65	67	69	71	73	75	77
Number of Elections Held	1	2	1	1	1	1	1	1	1	1	1
Outcomes	1.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0

In this figure the number of elections held during each two-year period was entered in the first row. Each observation was composed of a single election except in 1959 where the results from 1958 were included making a total of two observations. Incumbent school board member defeats occurred in 1957, 1959, 1963, 1969, and 1975 of the example presented in Figure 1. A score of "1" was recorded for the outcome under each of these election years.

After this type of data table was constructed for each of the 89 school districts, a three-way ANOVA data table was constructed. Election outcome in an initial election was used as Factor A. It possesses two levels, incumbent defeat and non-incumbent defeat. Factor B represents the election period following each election and consists of up to nine election periods following any election. Factor C is for the district sampled, and provides one level for each district in the sample. Factor C, therefore, has 89 levels. Figure 3 depicts the arrangement of the array (2 x 9 x 89) of data cells for this study.

In each cell, C_{ijk} (where i = outcome, j = period, and k = districts), is recorded the outcome of all elections within district k which occurred in the jth period following each election. Results are entered into either the incumbent defeat row (i.e., when i = 1) or the no incumbent defeat row (i.e., when i = 2) of the array depending on the outcome of the initial observation. In Figure 2 the outcome of the first election was an incumbent defeat as shown by a 1.0 under 1975. Accordingly, in Figure 3 outcomes for elections from 1959 to 1975 were recorded in the incumbent defeat row (row 1). A score of 1.0 and a second score of 0.0 are entered into cell 1 because the first outcome following the 1957 incumbent defeat included one incumbent defeat and one non-incumbent defeat election in 1958-59 two-year period. The other observations were then recorded in the following nine blocks such that the data recorded (1.0, 0.0, 0.0, 1.0, 0.0, 0.0, 1.0, 0.0, 0.0, 1.0) in Figure 3 correspond to the outcomes following the 1957 observation. The process was repeated with 1959 as the origin. Since the observation for 1959 was an incumbent defeat (1.0) the entries in Figure 2 were recorded in the incumbent defeat row (row 1). The other observations were then recorded in the following eight blocks such that the second series of data entries recorded in the top row of Figure 2 (0.0, 1.0, 0.0, 0.0, 1.0, 0.0, 0.0, 1.0, 0.0) correspond to the outcomes following the 1959 observation. When an observation was a non-incumbent defeat (0.0) as was the case in 1961, the tallying was recorded in the No Incumbent Defeat row (i.e., row 2) of Figure 3. So, the data recorded for 1961 was entered as 1.0, 0.0, 0.0, 1.0, 0.0, 0.0, 1.0, 0.0 in the cells of row 2. This

data recording process continued until all election outcomes following each election was recorded in the proper cells.

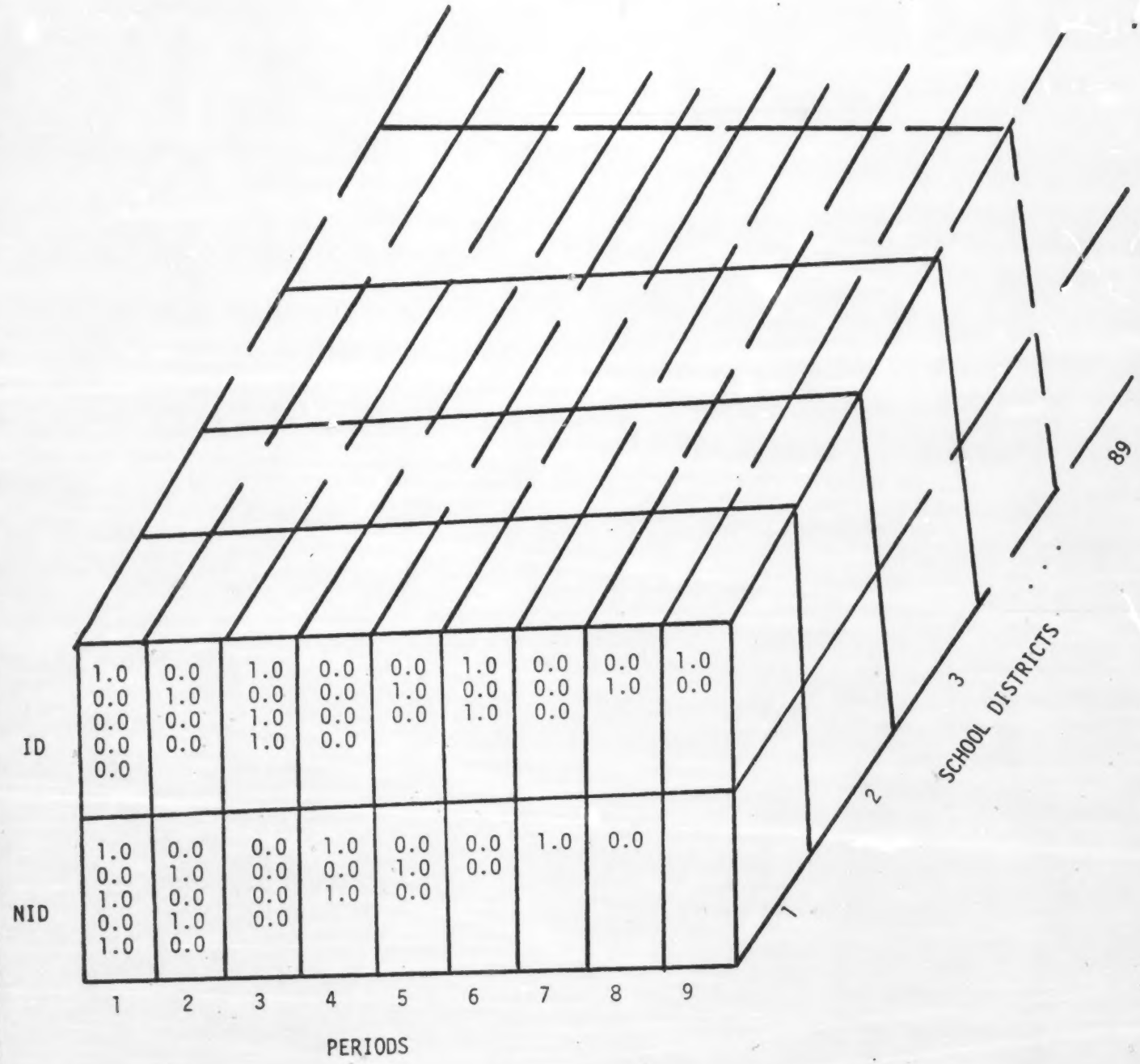
The resulting analysis of variance table is completely unbalanced. This three-way analysis of variance was applied to the data in order to test whether or not there are significant factor effects. We expect the districts to be a significant factor corresponding to the fact that some districts have much more political instability than do others. Our hypothesis suggests that in the null form no significant differences exist across the years. We hope to reject the null hypothesis that there are no interactive effects. The hypothesis that we are the most interested in is the interaction between outcomes and years.

The mean score in each cell of Figure 3 represent the proportion of elections in that cell involving an incumbent defeat. Hence, if the defeat of an incumbent affects the probability of further incumbent defeats in the same school districts at later election periods, the mean scores of the cells in the first row, i.e., those following an incumbent defeat, will be significantly different from the mean scores of the cells in the second row, i.e., those following elections which did not result in an incumbent defeat.

The hypothesis that the defeats will be clustered together in relatively brief episodes suggests that the mean scores in the first row will be higher during the early periods and equal to or lower than those of the second row during later elections more remote from the initial outcome which led to entry of the data into one row rather than the other.

FIGURE 3.

THE RESEARCH DESIGN (2 x 9 x 89)



In order to test for the significant differences between the means of the various cells, it must be kept in mind that we are dealing with a mixed effects design. The outcome factor and the period factor are fixed effects. However, the districts selected for this sample are merely a random sampling from the population of all districts and, therefore, must be treated as a random factor.

Given the mixed effects design, the error term was derived accordingly. The effects involving factors A and B alone or together (i.e., A, B, and A x B) were tested against appropriate interactions containing factor C (i.e., A x C, B x C, and A x B x C, respectively); since the remaining sources in the table "use up" the single random factor (i.e., C, A x C, B x C, and A x B x C), they are all tested against the $MS_{S/ABC}$ (within-groups mean square).[15]

Once the analysis of variance had demonstrated that the rate of incumbent defeat is significantly affected by prior election results, regression analysis was employed to describe more precisely the relationship between election periods. The calculated mean scores of the proposition of elections in the block of cells which involved an incumbent school board member defeat was graphed. Regression lines for the two sets of elections by outcome scores were then calculated.

Research Methodology: A Summary

Following the Iannaccone/Lutz "values" model, a working hypothesis was formulated which attempts to distinguish between an initial incumbent defeat after a period of quiescence and the existence of continued electoral instability.

Election data from 89 school districts in four Southern California counties from 1956 to 1977 was collected for the sample. A three-way analysis of variance (outcome x periods x districts) table was constructed to determine whether or not the outcome of any one election is significantly dependent upon the outcome of a previous election. Regression analysis was suggested as the second tool for describing more precisely the nature and extent of the relationship.

FINDINGS

Our hypothesis states that episodes of electoral instability as defined by the temporal clustering of incumbent school board member defeats will arise when communities are dissatisfied with their school boards. In exploring this hypothesis with an 89-district sample, it was first necessary to determine whether or not district efforts as identified by Minar's work are present in our data. Minar, as discussed in Chapter I, had found some districts to have experienced more episodes of conflict than others in their election history.[16]

The Minar problem was investigated by means of a two-way analysis of variance problem (districts by election periods). Four major findings can be identified in Table 3. First, there appears to be a significant distinct effect indicating that some districts do have significantly more incumbent school board member defeats than others. This finding tends to reconfirm Minar's[17] work showing that some districts have more electoral instability than do other districts. However, some further exploratory work needs to be done to determine this effect on the relationship of defeats and with other election periods. One further finding might be noted along these lines. That is, only 14 percent of the variance in the district effects is due to non-randomness. This means that 86 percent of the variance is due to expected randomness.

The third major finding from the two-way ANOVA is that there is a significant difference between years. A way of controlling for years

is needed in further analysis. Repeated entries in cells will control for this problem.

TABLE 3

TWO-WAY ANALYSIS OF VARIANCE ON THE ASSOCIATION BETWEEN INCUMBENT DEFEATS (FACTORS ARE DISTRICTS AND ELECTION PERIODS)

Source	Sum of Squares	df	Mean Sq.	F	p
Districts	26.287	88	.2987	1.49	< .01
Election Periods	5.709	9	.6343	3.16	< .05
District x Election Periods	158.791	792	.2005		ns
TOTAL	190.788	889			

It is important to consider one violation of assumption which was made in conducting this ANOVA. This violation was made with regard to the independence of the means and variances. The fact that the scores which were recorded were all ones and zeros means that the size of the variance is dependent upon the size of the means. Hence, a violation of a basic assumption in the F statistic was made.[18] The F statistic, while reaching a level of significance, is not above suspicion. Cochran's Q,[19] which is a nonparametric test for the same effects as the F statistic, was utilized to varify the robustness of the test. Cochran's Q was first computed to determine whether or not it is more likely for

some districts to have more incumbent school board member defeats than others. The result was as follows:

$$Q = \frac{(89)\ (88)\ (262.877)}{(89)\ (277)-(8181)} = 124.991 \qquad df = 88 \qquad p < .01$$

Cochran's Q was next calculated to determine whether the number of incumbent school board member defeats in any one election year is higher or lower in other years. The result was as follows:

$$Q = \frac{(10)\ (9)\ (508.1)}{(10)\ (277)-(1125)} = 27.298 \qquad df = 9 \qquad p < .005$$

The point to be made from Cochran's Q calculations is that the F statistic from the ANOVA errs slightly on the conservative side. Thus, the F statistic is robust with regard to the violation because the non-parametric statistic presents the same results.

The conclusion to be made from this two-way ANOVA is that there is a significant difference due to years and districts. Hence, the null hypothesis may be rejected. However, Minar's results show up in a relatively small proportion of the total variance in the sample. We need to further analyze our data by controlling out for years. The way to do this is by means of the three-way analysis of variance described in the last chapter (District x Outcomes x Election Periods).

Table 4 presents the results from the three-way analysis of variance. Eight major findings are implied in the results of this ANOVA. An examination of these findings will be discussed in the remainder of this chapter.

The first major finding from this three-way ANOVA is that there is a significant district effect indicating that some districts do have significantly more incumbent school board member defeats than do others. This reconfirms the finding in our two-way ANOVA which supports Minar's work.[20] Minar had found that some districts have significantly more electoral instability than others. Hence, Minar was right in saying that conflict tends to be focused in some districts. Some additional points can, however, be added to the theory. Namely, that there are no interaction effects between the District factor and either election periods or outcome. Hence, the higher rates of incumbent school board member defeats within any particular district do not effect significantly the relationship of those defeats to each other or to other election periods. It turns out that two additional inquiries into Minar's work can now be eliminated as not being true. Namely, whether or not some districts have more episodes than do others or whether some district's defeat patterns are more episodic than others should not be viewed in terms of any sort of interaction with the other two factors. Second, although it is true that some districts do have more incumbent defeats than do others, it does not disturb the episodic character or nature of the defeat patterns within each district.

The second major finding presented in our three-way ANOVA (Table 2) is that there is no interaction between the district effect and either the outcome or the election period effects. Hence, the maldistribution of incumbent defeats does not affect their clustering (i.e., their sequencing over time).

TABLE 4

THREE-WAY ANALYSIS OF VARIANCE ON THE
ASSOCIATION BETWEEN INCUMBENT DEFEATS
(FACTORS ARE PERIODS, OUTCOMES, AND DISTRICTS)

Sources	Sum of Squares	dF	Mean Sq.	F	P
Districts	170.4045	88	1.9364	9.338	< .001
Outcomes	1.1350	1	1.1350	18.369	< .001
Periods	1.0505	8	.1313	1.769	NS
Districts x Outcomes	5.4375	88	.0618	.298	NS
Districts x Periods	52.2556	704	.0742	.358	NS
Outcomes x Periods	8.1963	8	1.0245	7.390	< .001
District x Outcomes x Periods	97.6007	704	.1386	.669	NS
Within Cells	671.2452	3236	.2074		
TOTAL	1007.3252	4837			

Third, there is a highly significant interaction effect between outcomes and election periods indicating that the pattern of incumbent school board member defeats following a no incumbent defeat election is different from that following an incumbent defeat election. Thus, it is essential to disaggregate the data by outcome and compare the pattern of incumbent defeats following each of the two types of initial outcomes. This is what we had predicted and represents the effect of primary interest in this entire study.

The question at hand becomes: What can be learned about the nature of the interaction effect? Regression analysis was utilized in the interpretation of this problem.

Table 5 provides a look at the calculated mean scores in each block of cells which represents the proportion of elections in that block which involved an incumbent school board member defeat. Hence, if the defeat of an incumbent affects the probability of further incumbent defeats in the same school district at later election periods, the mean scores of the cells in the first row of the figure (i.e., those following an incumbent defeat) will be significantly different from the mean scores of the cells in the second row (i.e., those following an election which does not result in an incumbent defeat).

Figure 4 shows the graphic pattern of the plotted mean scores from Table 3. The typical rate of incumbent defeats in the 89-district sample was found to be about .296. Of the 4,838 elections recorded, there were 1,430 incumbent defeats. Therefore, of all the districts sampled there was a 30 percent chance that the result would be the defeat of an incumbent.

There are significant regression lines for each of the two sets of election by outcome scores which is our fourth major finding. The incumbent defeat regression line is <u>curvilinear</u>, given by the formula:

$$ID_{(ID)} = .476 - .074 \text{ (Election Periods)} + .006 \text{ (Election Periods)}^2$$

$$R = .855$$

$$R^2 = .732$$

$$n = 3403$$

$$\underline{p} < .001$$

TABLE 5

MEAN AND STANDARD DEVIATION SCORES FOR THE INCUMBENT DEFEAT AND THE NO INCUMBENT DEFEAT GROUPS IN EACH OF THE NINE PERIODS

N_{ID}	276	230	203	177	153	133	116	88	59
X_{ID}	.434	.326	.320	.366	.255	.271	.310	.307	.271
(Sd_{ID})	(.495)	(.470)	(.468)	(.443)	(.437)	(.446)	(.465)	(.464)	(.448)
N_{NID}	686	566	504	441	376	307	235	174	114
X_{NID}	.230	.272	.272	.290	.316	.326	.328	.333	.360
(Sd_{NID})	(.421)	(.445)	(.445)	(.454)	(.466)	(.469)	(.470)	(.473)	(.482)

This equation indicates that the number of incumbent defeats following an incumbent defeat is highest in the next election (with 41 percent of the districts likely to have an incumbent defeat), decreasing to a minimum at the sixth election when 25 percent of the districts will suffer incumbent defeats. Following the fifth or sixth election the incumbent defeat rate becomes quite erratic (see Figure 4) suggesting that the effect of the initial incumbent defeat has become marginal.

The regression line for the no incumbent defeat elections is linear and given by the formula:

$$ID_{(NID)} = .228 + .015 \text{ (Election Periods)}$$

$$R = .078$$

$$R^2 = .006$$

$$n = 1435$$

$$p < ns$$

This same regression equation can be calculated using only the mean scores which produces an equation of:

$$ID_{(NID)} = .226 + .016 \text{ (Election Periods)}$$

$$R = .985$$

$$R^2 = .970$$

$$n = 1435$$

$$p < .001$$

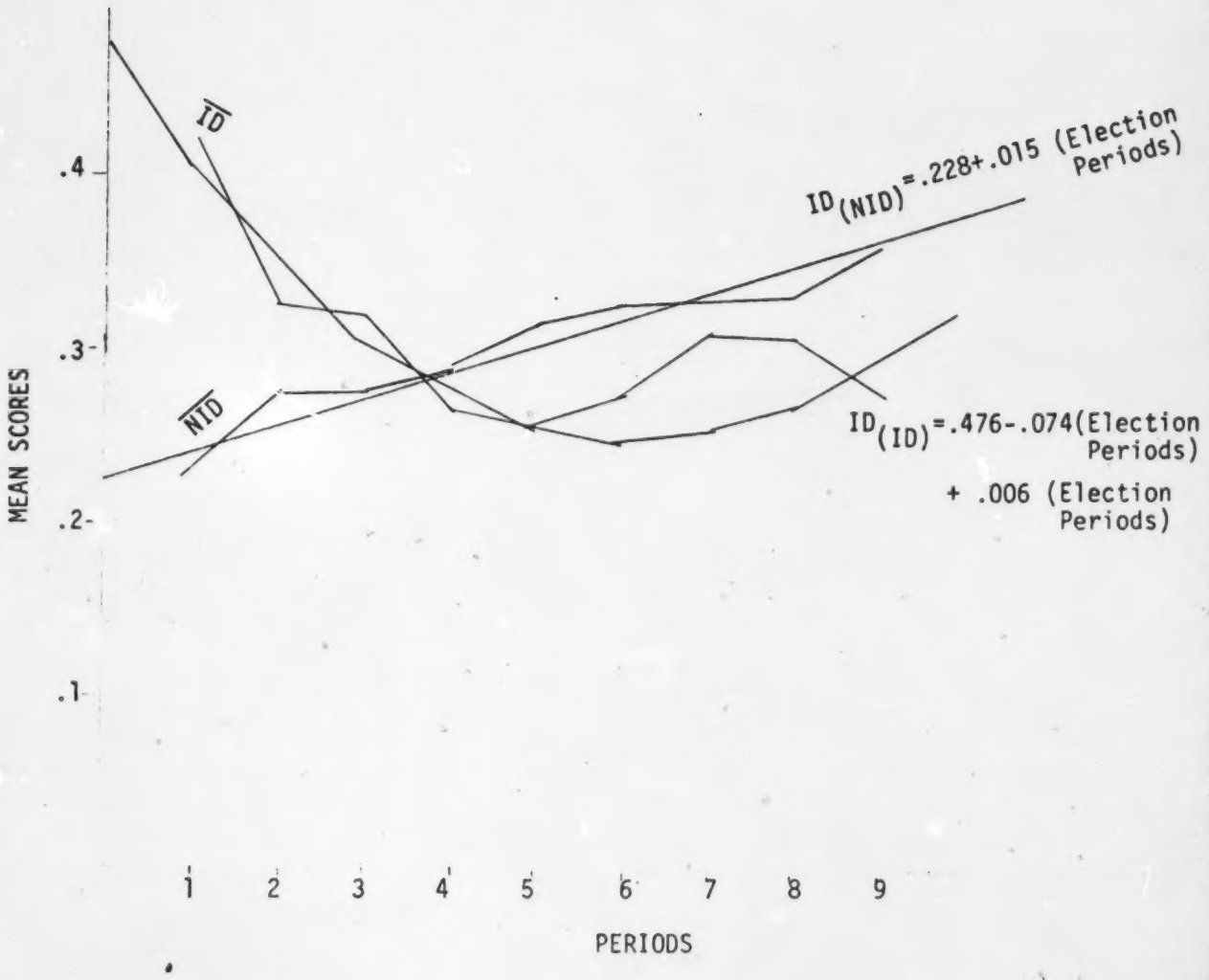
It is indicated that while only .6 percent are accounted for using individual elections 97 percent are explained when we use mean scores.

This operation suggests that the probability of suffering an incumbent defeat following an election in which no incumbent defeat occurred

FIGURE 4.

PROPORTION OF SCHOOL DISTRICTS SUFFERING

INCUMBENT DEFEAT IN SUCCESSIVE ELECTIONS



is at its lowest in the very next election (when approximately 24 percent of all districts suffer incumbent defeats) and rises fairly steadily at the rate of approximately 1.5 percent per election period (or .75 percent per year) over the entire range.

As expected, the number of incumbent defeats is higher immediately following an incumbent defeat than following no incumbent defeat. The two regression lines cross following the third subsequent election, however, so that the proportion of incumbent defeats following an incumbent defeat is actually lower for elections after the third one. In other words, having an incumbent defeat increases the probability of an incumbent defeat in the next three elections and suppresses the probability in elections eight or more years later.

To recapitulate our fourth finding, it was seen by way of regression analysis that the outcome of one election has a significant effect on the outcome of both immediately following elections and those occurring some years later.

Although the electoral outcome in elections 6, 7, 8, and 9 (see Figure 1) are much less reliable and hence raise serious questions about any effort to extrapolate our regression lines, one way to guess about the ultimate periodicity of episodic instability would be given by determining when the incumbent defeat line re-crosses the no incumbent defeat line. This intersection occurs after the seventeenth and before the eighteenth election. However, at that point the incumbent defeat rate would be about 49 percent. This is obviously too high since the highest measured rate (which came immediately after incumbent defeat elections) is only about 42 percent. It appears from this analysis

that a cycle would be less than seventeen or eighteen election periods.

Our sixth finding suggests that the power of the ability of the regression lines to predict incumbent defeat is clearer if we estimate the ability of each regression line to account for the mean scores in each election period since these represent the proportion of districts undergoing incumbent defeat. The only single election period in which there is a significant difference between the election outcomes in that period is the first one where the number of incumbent defeats after an incumbent defeat is significantly larger than the number after the first election after a non-incumbent defeat. In other words, if each pair of points, those following an incumbent defeat and those that correspond which follow a non-defeat, were compared the first election period is the only significant one. This is our seventh major finding.

The final finding suggested from Table 4 is that the main effect due to outcomes indicates that the total number of incumbent defeats following a non-incumbent defeat tends to be smaller. This, however, is primarily due to the presence of some districts having no incumbent defeats. At first it seems that this fact can be attributed to one of two factors. One is that it may be due to the fact that we don't have a full cycle because over the long haul the two regression lines (Figure 1) should even out. Another possibility could be attributed to the Minar[21] effect. That is, except for the fact that incumbent defeats tend to occur in some districts more often than in others, they should still even out due to other factors. After close inspection of Table 2, it is clear that the district effect is about 17 percent of the total which would

suggest Minar's explanation. Also, outcomes is about 13 percent of the total. Consequently, this finding should be attributed to Minar's explanation rather than to the incompleteness of a cycle.

Theoretical Implications

It is suggested by our findings that one needs to know where you are in the episode in terms of policy shifts. Dramatic policy changes do not just occur over night. At the heart of these policy shifts are pressures for political change. Electoral defeat episodes, no doubt, have an effect on all levels of local school district politics.

There is a high probability that real substantive reorganization is in fact dependent upon these political controls. What all of this says is that the political environment which influences the operations of the schools should be viewed as promoting serious and not instantaneous changes.

By distinguishing between initial incumbent defeats occurring after a period of quiescence and continued electoral instability involving repeated defeats, we have been able to reject the null hypothesis that there is no difference between incumbent defeats. This finding does suggest that over an extended period in the history of typical school board elections incumbent defeats occur in clusters which are separated by longish periods of low conflict. Based upon our findings, it appears that it is appropriate to talk about electoral dissatisfaction as an episodic process.

Beyond the sheer presence of episodic defeats interrupting longish periods of quiescence, there is support for the belief that these episodic defeats arise from changes in citizen satisfaction levels. It

would appear that the next link to establish in this theory is the discovery of reasonable evidence that citizens have changed their orientation toward the schools during the period immediately prior to the onset of an incumbent defeat episode.

Practical Implications

Our findings do have some practical ramifications for each of the key actors in the local school district political process. These findings suggest that the episodic change process is not instantaneous but rather takes as much as eight to ten years for the upheaval process once begun to be completed. The findings clearly indicate that citizens do play an active part in the decision making process when the school board becomes a closed system. This fact is evident in the clustering effect of incumbent defeats.

For school board members our findings suggest some important considerations. A school board incumbent needs to be aware of the political climate within the district. Our finding that the outcome of one election has a significant effect on both the immediate election and on those elections some years later should be an important concern of board members standing for reelection. For an incumbent standing for reelection following a no defeat election, the chances of an incumbent defeat are smaller than if the election were following a defeat election.

Superintendents also need to be sensitive and aware of the political climate of the community. According to the Iannaccone/Lutz theory, the policy mandate for change is passed from the school board to the school manager. This policy mandate for change often takes the form of a dismissal of the previous school manager. As found in the current re-

search, school districts' politics are episodic in nature which suggests that the fate of a school manager losing his political support could be characterized by this episodic sequence of events.

Summary

An attempt was made to view whether or not incumbent school board member defeats in a particular year depend upon or are influenced by incumbent defeats occurring in the same district at some earlier time. In so doing, it was necessary to first determine whether or not the Minar[22] finding was still present in the data. His finding was upheld by this research in that some districts do, indeed, suffer more electoral instability than do others.

In light of this finding, a three-way analysis of variance was made (Districts x Outcomes x Election Periods). District effects were found to be significant. However, since no interactional effects were found to be significant between districts and either of the other two factors, higher rates of incumbent defeats within a district will not affect significantly the relationship of those defeats to each other in any other election period. Thus, our evidence suggest that Minar's findings do not disturb the episodic question under investigation.

A highly significant interaction effect between outcomes and elections indicated that the pattern of incumbent defeats following a no defeat election is different from that following an incumbent defeat election. Data was disaggregated so that each of the election outcomes might better be described by way of regression analysis. The major findings from this operation suggest that the outcome of one election

has a significant effect on both the immediate elections and on those elections some years later.

A main effect due to outcome indicated that the total number of incumbent defeats following a no defeat election tends to be smaller. This, however, can be attributed to the presence of some districts having no incumbent defeats and the Minar[23] effect.

NOTES

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[12]Ibid.

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[16]David W. Minar, "Community Basis of Conflict in School System Politics," American Sociological Review, 31, No. 6 (December, 1966), pp. 822-835.

[17]Ibid.

[18]J.P. Guilford, Fundamental Statistics in Psychology and Education, Fourth Edition, New York: McGraw-Hill Book Co., 1965, pp. 300-302.

[19]William L. Hays, Statistics, New York: Holt, Rinehart and Winston, 1963, pp. 628-630.

[20]Minar, loc. cit.

[21]Ibid.

[22]Ibid.

[23]Ibid.